



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,438	11/30/2004	Kassim Juma	1488(04-79)	5503
25105	7590	09/19/2008		
Vesuvius Crucible Company 250 Park West Drive Pittsburgh, PA 15275			EXAMINER KURTZ, BENJAMIN M	
			ART UNIT	PAPER NUMBER
			1797	
			MAIL DATE	DELIVERY MODE
			09/19/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/516,438

**Applicant(s)**

JUMA, KASSIM

**Examiner**

BENJAMIN KURTZ

**Art Unit**

1797

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 7/08

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Claims 12-26 are pending, claims 1-11, 27 and 28 are canceled and claims 12 and 22 are currently amended.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 12-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation of the filter comprising a bonded network of graphitizable carbon present up to 15% by weight is not supported by the specification. The specification recites the bonded network being a graphitized carbon network (abstract, pg. 8, lines 29-30, pg. 11, line 1, and pg. 13, lines 22-23). The term graphitizable refers to a precursor that is heated to make the graphitized carbon network. The specification teaches that the graphitizable carbon is graphitized to make the final filter device; therefore, there is no support for the specific % content of

graphitizable carbon. The specification appears to only provide support for 15% by weight of graphitized carbon.

Applicant's arguments traversing this rejection are not persuasive: The specification only provides support for graphitized carbon up to 15% by weight and not for graphitizable carbon. The cited paragraph (paragraph 39) of the specification provides no support for the specific % of graphitizable carbon.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 12-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Both independent claims, 12 and 26, recite graphitizable carbon is present in an amount produced by 15% by weight graphitizable carbon. It is unclear what is claimed because, as claimed, graphitizable carbon is producing graphitizable carbon. It is unclear if the graphitizable carbon remains graphitizable in which case it has not produced anything but instead has simply retained its original characteristics or if the process actually produces more graphitizable carbon from some other source. Accordingly the claims are considered to be indefinite.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 12-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daussan et al. US 5 690 161 in view of Morris et al. US 5 785 851 and Jones et al. US 5 520 823.**

Regarding claims 12 and 20, Daussan teaches a filter device (1b) comprising a protruding frame (11) joining a plurality of sieve plates (2a), the protruding frame and sieve plates defining a reservoir chamber (6) (fig. 3). Daussan does not teach a bonded network of graphitized carbon or each plate including a corrugated surface.

Jones teaches a filter comprising a bonded network of graphitized carbon in a positive amount up to 15% by weight and a ceramic raw material (col. 2, lines 9-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the graphitized carbon network of Jones because the material does not pick up moisture from the atmosphere and has superior strength at ambient and elevated temperatures than prior art filters (col. 4, lines 13-23).

Morris teaches a filter device with a plate including a corrugated surface (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use corrugation because the inlet surface has a large contact area which

significantly increases the filtration capacity of the filter and the flow rate of the fluid passing therethrough (col. 1, lines 45-55). 'For molten steel filtration' is intended use.

The claims are product by process claims; however, they do not overcome the product of the currently cited references. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 227 USDQ 964 (1985).

Applicant argues the process of Jones does not use a non-oxidizing and/or reducing atmosphere during the firing process. Jones nowhere does Jones teach the atmosphere is an oxidizing atmosphere and instead teaches that steps must be taken to prevent oxidation such as by adding silicon (column 3, lines 13-26 and 56-61 of Jones). Applicant also argues the product of Jones is different than the claimed invention because Jones contains a matrix of borosilicate glass. Jones having a matrix of borosilicate glass is not commensurate in scope with the claims; the claims do not exclude other materials from the composition. Applicant also argues the process of Jones would not produce the carbon bonded filter. The process of Jones has similar steps and does teach the use of graphitizable carbon (col. 3, lines 13-16). However, applicant's specification provides support only for the end product containing a graphitized carbon which Jones also contains in the final product.

Regarding claims 13 and 14, Morris teaches the corrugated surface but does not teach a specific dimension of the corrugation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a suitable corrugation within the claimed range to optimize the filter, absent a showing of unexpected results by using the claimed range.

Regarding claims 15-19, Daussan further teaches each sieve plate defines a plurality of through holes (3) and the through holes of a first plate are spaced laterally from the through holes of a second plate (fig. 3); the through holes comprise a circular shape (fig. 2); and the sieve plates include substantially an identical geometry (fig. 3). Daussan teaches the effectiveness of any filter depends essentially on the diameter of the holes and the number of plates (col. 2, line 66 – col. 3, line 6), and if the diameter of the holes is less than 1mm filtration takes a long time and clogs easily. It would have been obvious to one of ordinary skill in the art to optimize the range of hole sizes in, view of the teachings of Daussan, to the claimed ranges as they are greater than 1mm and to filter out the desired sized particles.

Regarding claim 21, Daussan further teaches the filter material includes reinforcing fiber (col. 3, lines 43-44).

**4. Claims 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones '823 in view of Daussan '161 and Morris '851.**

Regarding claim 22, Jones teaches a method for producing a filter device comprising a bonded network of graphitized carbon, the method comprising: pressing a semi-damp mixture comprising ceramic powder and a graphitizable bonding precursor and fibers to obtain a sieve plate having a disk shape, and firing the assembly in a non-oxidizing atmosphere to a temperature up to 1000 deg. C wherein the graphitizable carbon is present in a positive amount up to 15% by weight (col. 2, lines 10-27, col. 3, lines 13-25). Jones teaches the advantages of using a non-oxidizing atmosphere (col. 3, lines 23-26 and lines 56-61). Jones does not teach the configuration of the plates.

Daussan teaches a filtering device comprising a protruding frame joining a plurality of sieve plates, the protruding frame and sieve plates defining a reservoir chamber with the plates joined by a binder (fig. 3, col. 4, line 66 – col. 5, line 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use make the protruding frame of Daussan because they allow metal to be exposed to treatment material prior to being introduced into a mold (col. 1, line 60 – col. 2, line 2).

Morris teaches a filter device with a plate including a corrugated surface (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a corrugation because the inlet surface has a large contact area which significantly increases the filtration capacity of the filter and the flow rate of the fluid passing therethrough (col. 1, lines 45-55).

Applicant argues the procedure taught by Jones cannot produce a carbon bonded network. Jones teaches the use of a graphitizable carbon precursor (col. 3, lines 13-16) and all of the other claimed process steps.

Regarding claim 23, Daussan teaches a binder but does not teach the binder being ceramic or carbon. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same components that are in the filter and because ceramic and carbon are durable under the operating conditions of the filter.

Regarding claim 25, Jones further teaches the firing occurs between 600-700 deg. C (col. 3, lines 60-61).

Regarding claim 26, the specification defines roughening the surface as 'pressing directly the geometry providing a corrugation or height difference between the peaks and troughs'. Morris teaches a corrugated surface with height difference between peaks and troughs and is therefore deemed to teach the claimed limitation.

Regarding claim 24, Jones teaches the advantages of using a non-oxidizing atmosphere for the step of firing the assembly (col. 3, lines 23-26 and lines 56-61). Jones does not teach a reducing atmosphere. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a reducing atmosphere as it is a non-oxidizing atmosphere and will not adversely affect the firing process.

**5. Claims 12-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daussan '161 in view of Morris '851 and Bell et al. US 2007/0090047.**

Daussan teaches a filter device (1b) comprising a protruding frame (11) joining a plurality of sieve plates (2a), the protruding frame and sieve plates defining a reservoir chamber (6) (fig. 3). Daussan does not teach a bonded network of graphitized carbon or each plate including a corrugated surface.

Bell teaches a filter device comprising a bonded network of graphitizable carbon fired in a non-oxidizing atmosphere at a temperature of less than 1000 degrees C, wherein the graphitizable carbon is present in an amount of 15% by weight. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the graphitizable carbon network filter material of Bell because the filter can be made with lower density and lower thermal mass so the filter abstracts less heat from the metal during pouring (paragraph 88).

Morris teaches a filter device with a plate including a corrugated surface (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use corrugation because the inlet surface has a large contact area which significantly increases the filtration capacity of the filter and the flow rate of the fluid passing therethrough (col. 1, lines 45-55). 'For molten steel filtration' is intended use.

The claims are product by process claims; however, they do not overcome the product of the currently cited references. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious

from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 227 USDQ 964 (1985).

Regarding claims 13 and 14, Morris teaches the corrugated surface but does not teach a specific dimension of the corrugation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a suitable corrugation within the claimed range to optimize the filter, absent a showing of unexpected results by using the claimed range.

Regarding claims 15-19, Daussan further teaches each sieve plate defines a plurality of through holes (3) and the through holes of a first plate are spaced laterally from the through holes of a second plate (fig. 3); the through holes comprise a circular shape (fig. 2); and the sieve plates include substantially an identical geometry (fig. 3). Daussan teaches the effectiveness of any filter depends essentially on the diameter of the holes and the number of plates (col. 2, line 66 – col. 3, line 6), and if the diameter of the holes is less than 1mm filtration takes a long time and clogs easily. It would have been obvious to one of ordinary skill in the art to optimize the range of hole sizes in, view of the teachings of Daussan, to the claimed ranges as they are greater than 1mm and to filter out the desired sized particles.

Regarding claim 21, Daussan further teaches the filter material includes reinforcing fiber (col. 3, lines 43-44).

**6. Claims 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bell '047 in view of Daussan '161 and Morris '851.**

Claim 22, Bell teaches a method for producing a filter device comprising a bonded network of graphitized carbon, the method comprising: pressing a semi-damp mixture comprising ceramic powder and a graphitizable bonding precursor and fibers to obtain a sieve plate having a disk shape, and firing the assembly in a non-oxidizing atmosphere to a temperature less than 1000 deg. C wherein the graphitizable carbon is present in a positive amount up to 15% by weight (claims 8-53). Bell does not teach the configuration of the plates.

Daussan teaches a filtering device comprising a protruding frame joining a plurality of sieve plates, the protruding frame and sieve plates defining a reservoir chamber with the plates joined by a binder (fig. 3, col. 4, line 66 – col. 5, line 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use make the protruding frame of Daussan because they allow metal to be exposed to treatment material prior to being introduced into a mold (col. 1, line 60 – col. 2, line 2).

Morris teaches a filter device with a plate including a corrugated surface (fig. 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a corrugation because the inlet surface has a large contact area which significantly increases the filtration capacity of the filter and the flow rate of the fluid passing therethrough (col. 1, lines 45-55).

Regarding claim 23, Daussan teaches a binder but does not teach the binder being ceramic or carbon. It would have been obvious to one of ordinary skill in the art at

the time the invention was made to use the same components that are in the filter and because ceramic and carbon are durable under the operating conditions of the filter.

Regarding claim 25, Bell further teaches the firing occurs between 600-700 deg. C (claim 37).

Regarding claim 26, the specification defines roughening the surface as 'pressing directly the geometry providing a corrugation or height difference between the peaks and troughs'. Morris teaches a corrugated surface with height difference between peaks and troughs and is therefore deemed to teach the claimed limitation.

### ***Response to Arguments***

7. Applicant's arguments filed 7/31/08 have been fully considered but they are not persuasive. The arguments are addresses in the rejection above.

The Declaration of Dr. Kassim Juma is not persuasive to overcome the prima facie case. The structural differences argued are not apparent in the claims. Claim language does not exclude other material additives in the formulation or in the product.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN KURTZ whose telephone number is (571)272-8211. The examiner can normally be reached on Monday through Friday 8:00am to 4:00pm.

Art Unit: 1797

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Benjamin Kurtz  
Examiner  
Art Unit 1797

/Benjamin Kurtz/  
Examiner, Art Unit 1797  
9/16/08

/Krishnan S Menon/  
Primary Examiner, Art Unit 1797